

**Review of the Service's Efforts to Prepare
Its Tier II Infrastructure for the Year 2000**

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Tier II Infrastructure for the Year 2000**

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Executive Summary

One of the most critical issues the Service faces this year and next is the need to make its computer systems Year 2000 (Y2K) compliant. The Service's ability to successfully meet this enormous challenge will largely be determined by the quality of their program management and executive leadership. The Service is a \$1.7 trillion financial services organization dependent on its automated systems to process tax returns, issue refunds, deposit payments, and provide employee access to timely and accurate taxpayer account data. Failure to identify, renovate, and test each of these system calculations could result in catastrophic disruption to taxpayers and the government.

The objective of this review was to evaluate the overall efforts of the Service in identifying and converting its Tier II infrastructure. Although the majority of the Service's tax processing occurs at the Tier I level, there is a significant amount of processing at the Tier II level, as well. As a result, some Tier II systems feed data to the Tier I systems. Examples of processing systems in Tier II include the Electronic Management System (EMS) and Telefile.

Results

The Service must better focus, manage, and control the Century Date Change (CDC) effort to assure business continuity. Our review identified the following areas where critical improvements are needed:

- Planning and coordination of the conversion effort
- Inventory management
- Contingency planning

The Century Date Change Project Office and the Tier II Program Office have made progress in the way the Y2K effort is being tracked and managed. However, the conversion of the Tier II infrastructure by January 1999, is questionable. In May 1998, we reported to management the need to establish an implementation plan for the Tier II effort, enhance the planning and coordination of the Tier II testing effort, and improve coordination and accountability with the field and customer organizations.

Information Systems management agreed with the issues we reported in May 1998, and established a Tier II Program Office to address these issues. A work breakdown structure to schedule testing and implementation for mission critical Tier II systems was developed, and an overall implementation schedule was to be developed by July 30, 1998. Coordination improvements were implemented to address Tier II issues. However, the corrective actions planned in response to the coordination issues in our

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memorandum addressed Tier II only. The conditions we observed were not confined to Tier II, but included coordination issues among all Tiers.

As our review progressed, we reported to management the need to ensure consistency between Y2K needs and Integrated Network and Operations Management System (INOMS) instructions, and to improve the accuracy and completeness of the inventory. We are now reporting the need to establish contingency plans for delays in vendor schedules and infrastructure upgrades.

Accuracy of INOMS is critical because it is the primary tool the CDC Project Office and the Tier II Program office are using to track the Y2K conversion process. We identified that the platform inventory is complete but nearly half of the 837 platforms reviewed were recorded inaccurately. The Commercial-Off-The-Shelf (COTS) software inventory was incomplete and inaccurate. Approximately 28% of the 411 products were not recorded on INOMS, and 22% were recorded with the wrong version. In a separate test for accuracy, 77 of 168 products were recorded with the incorrect version.

Each of the findings identified above is addressed as steps in the awareness and assessment phases outlined in GAO's Assessment Guide for Year 2000. According to the guide, these phases should have been completed by mid-1997 to ensure conversion is completed for Y2K. However, the Service is still in the process of finalizing their Tier II inventory and establishing detailed management plans for the Tier II initiative. Based on our assessment, conversion of the Tier II processing systems by January 1999, is in jeopardy.

Summary Recommendations

We recommend the following:

- The Tier II Program Office develop an overall implementation plan for the Tier II conversion effort.
- The Program Office develop a testing plan as a subset of the overall implementation plan.
- The CDC Project Office designate a central executive contact point in each field and customer organization, to be responsible and accountable for coordinating the Y2K communication within that organization. In addition, we recommend that the Project Office establish a communications coordinator to track requests made to these organizations for all Y2K initiatives and their response dates.

Auditor's Note: Management responded to each of the above recommendations when they were issued in a memorandum. However, this recommendation was designed to address broad CDC coordination issues, not just those related to Tier II. A broader corrective action is needed to address this concern.

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- The CDC Project Office coordinate with the INOMS group in the National Office to ensure consistent direction on what and how specific items are to be recorded. All changes should be immediately communicated to the field offices.
- The Chief Information Officer utilize assistance from a vendor to validate and correct the Tier II inventory of all mission-critical Tier II systems in all applicable sites. Our findings should also be communicated to all field offices along with a requirement for inventory recertification.
- Inventory accuracy be added as an expectation for service center and district directors' performance.
- Inventory data be added when the item is purchased and updated when item is received.
- The CDC Project Office and the Tier II Program Office develop detailed contingency plans to account for delays in vendor delivery and field office upgrades.

Management Response: Management's earlier response (see preceding page) has been summarized in the report. However, their response to this complete report was not available for inclusion at the time it was issued. We were informed that management is developing actions to address our concerns and will provide us with a written description of their proposed corrective actions at a later date.

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Objectives and Scope

Our primary objective was to assess IS and non-IS Y2K efforts to determine if the Service has assurance that its Tier II infrastructure will operate in the next century.

This report represents the results of our review of the Service's efforts to prepare its Tier II infrastructure for the century date change. We initiated this review as part of Internal Audit's Year 2000 (Y2K) strategy. Our primary objective was to assess the Information Systems (IS) and non-Information Systems (non-IS) Y2K efforts to determine if the Service has assurance that its Tier II infrastructure will operate in the next century. The audit was performed in accordance with generally accepted government auditing standards from March to August 1998.

We conducted testing in the Century Date Change (CDC) Project Office and the Tier II Program Office. Testing was also conducted in certain Northeast, Midstates, and Southeast Region District Offices; the Austin, Kansas City, Memphis, Brookhaven, Andover, Atlanta, Philadelphia and Cincinnati Service Centers; and the Detroit and Martinsburg Computing Centers.

Our tests were designed to provide an overall assessment of the management of the Tier II effort and the accuracy and completeness of the Integrated Network Operations Management System (INOMS) Tier II inventory. We also performed some testing to determine whether the Service can rely on vendors' efforts to make Commercial Off-The-Shelf (COTS) products Y2K compliant.

For purposes of this report, references to "field office" includes regional and district offices and service centers. The detailed audit objectives and scope of review is included in Attachment I.

Management's response to a memorandum presenting our first three findings and related recommendations has been summarized in this report. However, their response to the complete report was not available for inclusion at the time it was issued. We were informed that management is developing actions to address our concerns and will provide us with a written description of their proposed corrective actions at a later date.

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Background

The Century Date Change is a critical organizational issue.

The Y2K date change is one of the most critical problems facing most organizations today. On February 11, 1997, the Deputy Commissioner issued a memorandum on Inventory of Computer Systems to Facilitate Century Date Compliance. The memorandum provided reporting requirements as well as compliance and enforcement actions for executives to ensure the CDC project is completed timely. The Deputy Commissioner urged all executives to do “whatever it takes” to support the timely and successful completion of this effort.

To ensure Y2K compliance, the Service must evaluate all computer systems and applications. Although the majority of the Service’s tax processing occurs at the Tier I level, there is a significant amount of processing at the Tier II level, as well. Tier II processing systems include the, Electronic Management System (EMS), and Telefile.

The CDC Project Office was established to ensure all current and future IRS systems are Y2K compliant prior to January 1, 2000. Applications are to be converted, tested, and implemented and COTS products are to be converted by January 31, 1999. Since we began our review, IS has established a new Tier II Program Office to provide Tier II program management and facilitate the timely integration of Y2K compliant applications and COTS products on compliant platforms.

Non-IS efforts include appointing a Y2K Executive Council to identify and assess all non-IS Tier I and II applications and system software for Y2K impact. The Executive Council included officials from the service centers, regional and district offices, and headquarters non-IS areas. In addition to the Council, the Service has established a service center and a regional Y2K executive. These executives are responsible for coordinating with the IS CDC Project Office and the field offices to ensure non-IS Y2K efforts are accomplished.

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Results

The CDC Project Office and the Tier II Program Office have taken steps to ensure the Service's Tier II systems are ready for the century date change. The Tier II Program Office has identified Y2K compliant versions of operating systems and Database Management Systems (DBMS) for Tier II platforms and the field offices are obtaining these targeted products. In addition, the field offices have complied with the Tier II Program Office request to clean-up questionable Tier II platforms on INOMS. The field offices have also taken steps to protect the applications currently running on the Tier II platforms that will not be upgraded for the Y2K. Our review of a sample of inactive platforms and products showed that nearly all were classified correctly and the majority were being excessed or retired.

However, the Service's overall management of the Y2K effort and the Tier II infrastructure conversion can be improved. Our review identified several areas that need to be addressed for the service-wide Y2K and Tier II Y2K initiative.

The Service needs to improve coordination and communication with the field offices.

We issued a memorandum to management on May 8, 1998, which detailed the following issues:

- An overall implementation plan should be established with milestone dates covering the conversion of Tier II systems and the necessary migration of Tier II applications from platforms scheduled to be retired.
- Planning and coordination of the testing and conversion efforts needs improvement.
- Coordination with the field and customer organizations needs strengthening.

In response to the above memorandum and concerns of the Commissioner, the Tier II Program Office was established to coordinate the conversion effort.

This report initially details the issues presented in the memorandum along with management's responses and

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The Service needs to improve the management of the Tier II effort and the accuracy and completeness of the INOMS inventory.

any related auditor comments. In addition to the above issues, we have identified the following additional issues that need to be addressed:

- Certain Y2K INOMS requirements are not reflected in the guidance issued by the INOMS office.
- Tier II platforms and COTS software products are not consistently captured on INOMS and product information is recorded inaccurately.
- Contingency plans are needed for vendor and field office delays in product delivery and infrastructure component upgrades.

An implementation plan for the Tier II effort is needed.

The PMP serves as the overall implementation plan for the CDC project.

The CDC Project Office has developed a Project Management Plan (PMP) for the implementation of the CDC Project. The PMP describes the conversion strategy and the 14-step conversion process, and establishes interim target dates for the conversion of system applications.

The PMP does not provide interim target dates for the Tier II infrastructure conversion.

The GAO Assessment Guide for Year 2000 states that a Y2K program plan should be developed that includes schedules for all tasks and phases of the Y2K program. The Service's PMP does not, however, establish interim target dates for the conversion or replacement of Tier II system platforms or their related COTS products. The Project Office has established January 31, 1999, as the final target date for the conversion of these products.

The lack of a Tier II implementation plan greatly reduces the Project Office's ability to monitor the effect of decisions and delays on the Service's efforts to complete the Tier II initiative by the January 1999, target date. For example, the Project Office, in conjunction with the Tier II Program Owner, cannot provide the field with necessary milestones that must be met for Tier II to meet the overall target date. Without these interim milestones to measure progress, the

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Service has an increased risk of not meeting the overall Tier II conversion date of January 1999.

In our closing meeting on September 15, we were informed that a draft Integrated Management Schedule (IMS) had been presented to the Commissioner at the end of August. This covered a portion of the Tier II systems being monitored by the program office. A full management schedule showing all systems had not yet been developed.

Recommendation

1. We recommend the Tier II Program Office develop an overall implementation plan for the Tier II conversion effort. The implementation plan should:
 - Establish interim milestone dates for those activities that must be completed to meet the January 1999, target date.
 - Document the method of monitoring implementation.

Management's Response: In response to Internal Audit's memorandum issued May 8, 1998, the Tier II Program Office began developing a Project Management Plan for Tier II. The plan will address the testing and implementation of compliant Tier II systems as well as the retirement of non-compliant COTS products and platforms.

Auditor Comment

The Tier II Program Office planned to have this document completed by July 30, 1998. However, as of our closing meeting on September 15, 1998, a full implementation plan had not yet been completed.

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**Planning and coordination of the testing effort
need to be enhanced.**

A detailed testing plan for Tier II has not been established.

The GAO Assessment Guide for Year 2000 states that one of the activities to be completed during the assessment phase of the Y2K conversion is the establishment of a testing plan. In addition, agencies should define the requirements for Y2K testing facilities including the need to acquire test facilities. Despite these guidelines, at the time of our initial review the Service did not have a detailed coordinated testing plan for Tier II.

In an April 7, 1998, memorandum from the CDC Project Office, the field and customer organizations were asked to accept ownership and begin conversion of the Tier II platforms and COTS products. The Project Office indicated that the Distributed Systems Management Branch would independently test the Y2K compatibility and interoperability of the Tier II system components as they were made available from the vendors.

The field offices were told to proceed with application testing before testing of the system components was completed.

At the time of our initial memorandum (May 8, 1998), the field and customer organizations were told not to wait for the completion of this testing before they begin application testing on the platforms. A number of the Tier II system components had not yet been made available from the vendor. As vendors made Tier II system components available, the compatibility and interoperability testing and the application testing in the field were to be conducted simultaneously.

Lack of separate testing environments increases the risk that Service processing could be interrupted.

Because some of the field and customer sites do not have separate testing environments, system upgrades could potentially be made in a production environment. This dramatically increases the risk that problems identified with the compatibility or operability of the Tier II system components could interrupt current Service processing. In addition, simultaneous testing of applications and system components increases the difficulty of identifying the origin of problems encountered during testing. This results in an increased risk of delays in the overall conversion.

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We reported this issue to management in a memorandum dated May 8, 1998, with the recommendations that follow. Since that time, a significant effort has taken place to identify responsible executives for each of the mission-critical systems and to obtain concurrence from those executives on required testing and conversion milestones. We will follow-up on the conversion effort for mission-critical Tier II systems in the second phase of our review.

Recommendation

2. We recommend that a testing plan be established as a subset of the overall implementation plan. This plan should address:
 - Milestone dates for required tasks.
 - Responsibilities for completing testing tasks.
 - A method to ensure all problems encountered in testing are communicated to a central control point and addressed.
 - A method of monitoring the progress of the testing effort.

Management's Response: In response to Internal Audit's memorandum issued May 8, 1998, the Tier II Program Office developed a detailed testing schedule for all mission critical Tier II systems. The schedule established interim milestones for completion of testing and the transmittal of the system into production. In addition, progress on each system will be tracked weekly.

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**Coordination and accountability with the field
and customer organizations need to be
improved.**

*The Service has
established an extensive
network of Y2K executives
and coordinators.*

The CDC Project Office, tier owners, and representatives from field offices are working together to identify, standardize, and convert the Service's computer systems. The Service has established a network of executives and coordinators to address Y2K issues. A national executive has been designated for the service centers and the regional and district offices. In addition, a regional Y2K executive has been established in each region and the service has also established a Y2K and an INOMS coordinator in each regional office and service center.

*A central contact point and
coordination of field office
requests can improve
overall coordination efforts.*

These efforts require extreme coordination and cooperation from all parties involved to ensure the success of the Y2K conversion. According to the personnel involved, needed accountability requires a centralized control point in each major field and customer organization to improve the following areas:

- Responsibility for the CDC efforts required by each organization.
- Coordination of action and information requests made to each field and customer organization.

*Y2K executives and Y2K
coordinator positions are
not being effectively used.*

Our analysis of the Y2K executive and Y2K coordinator structure identified problems in the use of these positions to effectively manage and carry out the Y2K effort. The regional executives are not being fully utilized and they are not informed of all CDC Project Office requests. The field Y2K executive positions do not appear to be considered critical positions. For example, the Midstates Regional executive was detailed to headquarters early in our review and was not replaced for several months. Also, the national executive position for the field and customer organizations was vacant for five months.

The Y2K program owner responsible for each of the Y2K initiatives communicates with the Y2K coordinators. The coordinators may be asked to provide

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Multiple requests to Y2K coordinators ask for similar information and are not distributed consistently.

the CDC Project Office with additional information, to identify inventory or to validate information provided by the Project Office. Each of these requests may carry an independent response date. Discussions with the field Y2K and INOMS coordinators indicate the coordinators are frustrated with the number of requests and the lack of coordination when establishing target response dates.

We analyzed requests forwarded by the CDC Project Office to the Y2K coordinators between January 1997 and March 1998. Our analysis showed a number of the requests asked for similar information for one or more Y2K initiatives. In addition, the response dates established for the receipt of this information conflicted among the various Y2K initiatives. Also, requests were not always forwarded to all Y2K executives and other Y2K designated officials.

GAO's Year 2000 Computing Crisis: An Assessment Guide states that a committee needs to be established to continually coordinate with the programmatic and functional area managers. The Guide also indicates that it is important for the technical and management staff of the core business areas to work closely with the Y2K project teams in the assessment and testing process.

The lack of coordination of field and customer organization requests by the CDC Project Office reduces the level of cooperation being provided by these organizations. Coordination of requests for action or information can reduce the duplication of effort currently required to satisfy these requests and will ensure response dates are feasible and obtainable. In addition, a central contact point in the field and customer organizations for the Y2K effort will improve the CDC Project Office's ability to readily ascertain the status of the Y2K effort in these organizations.

We initially reported this issue in a memorandum dated May 8, 1998, with the recommendations that follow. We received a response that was focused solely from a Tier II perspective (see auditor comment below). We believe additional corrective action is necessary to improve coordination of the entire CDC effort.

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Recommendation

We recommend that the CDC Project Office:

3. Designate a central executive contact point in each field and customer organization to be responsible and accountable for coordinating the communication and monitoring of all Y2K information and action requests for that organization.
4. Coordinate requests issued to the field and customer organizations by establishing a communications coordinator to track requests made to these organizations for all Y2K initiatives and their response dates.

Management's Response: In response to Internal Audit's memorandum issued on May 8, 1998, the Tier II Program Office established Tier II executive contacts for the regions, districts and service centers. Coordination of Tier II efforts is being accomplished through these executives.

Auditor Comment

This action addresses the coordination issue related to the Tier II initiative, but does not address the overall coordination issues relative to Y2K as a whole. The conditions we observed were not confined to Tier II, but included coordination issues among all Tiers. Therefore, additional corrective action is needed to address the broader Century Date Change issue.

Certain Y2K and Tier II program office requirements are not reflected in the INOMS handbook.

During our review, we identified two specific instances where the Y2K needs conflict with INOMS instructions and documentation. This condition is causing confusion in the field and customer organizations and can jeopardize the success of the Y2K effort. Following are situations where the needs of the CDC Project Office

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The INOMS handbook and Y2K needs are inconsistent on how site licenses and microcomputers are to be recorded.

and the Tier II program office have not been reflected in the INOMS handbook.

- The INOMS Procedural Guide states that site or nationally licensed COTS software products only need to be recorded once on INOMS and do not have to be associated with every platform on which they are installed. However, the CDC Project Office and the Program Owners need to know what products are running on each individual platform.
- The INOMS Procedural Guide states that products used as workstations are to be classified as microcomputers. However, the CDC Project Office has determined that all NCR 3430s, commonly used as workstations, should be classified as minicomputers.

Conflicting direction between the CDC Project Office/Tier II program office and the INOMS Procedural Guide creates confusion for the field and customer organizations and directly affects the completeness and accuracy of the INOMS inventory. Discussions with field personnel in various locations indicated that they rely on the INOMS documentation for guidance and there was confusion and frustration with the inconsistencies between INOMS and CDC direction.

Recommendation

5. We recommend the CDC Project Office coordinate with the INOMS group at headquarters to ensure consistent direction is given to the field and customer organizations on which specific items are to be recorded and how they should be recorded on INOMS.
6. The CDC Project Office should provide the field with immediate notification of changes in direction resulting from this coordination via e-mail, VMS, or conference call accompanied by a memorandum to the National Y2K executives, the heads of office and the Y2K coordinators.

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The accuracy and completeness of the Tier II hardware and COTS software inventories need to be improved.

INOMS is the primary tool for monitoring the Y2K conversion.

INOMS is the primary tool the CDC Project Office and the Tier II Program Office are using to track the Y2K conversion progress. The Tier II Program Office is using INOMS to identify platforms that need to have Y2K operating systems and COTS software products. In addition, INOMS is being used to identify each COTS software product currently in use so Y2K compliant versions can be identified.

The CDC Project Office and the Tier II Program Owner have made repeated requests to the field and customer organizations to clean up their ADP inventory on INOMS. Requests have also come from the Deputy Commissioner, Associate Commissioner for Modernization, and the Chief Information Officer. However, our audit tests show that the INOMS inventory for Tier II contains a number of inaccuracies. As part of our testing in the 26 sites, we:

- Physically verified Tier II platforms.
- Verified the items that were included in our sample of Tier II COTS software products.
- Randomly selected two or three platforms in each site and compared the COTS software products running on those platforms to what was on INOMS.

The Tier II platform inventory is complete but inaccurate.

Our testing identified that the Tier II platform inventory is relatively complete, but the items have some inaccuracies. However, the COTS software inventory for Tier II is not complete, and also has significant inaccuracies.

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Tier II platform inventory is complete but inaccurate

Of the 837 platforms reviewed, 46% contained errors in the INOMS records.

Our audit testing in the 26 sites visited identified 837 platforms. Of those, only 14 were not recorded on INOMS. However, 386 (46%) of the platforms had errors in at least one of the following areas:

- Misclassification (inventory type mainframe or micro vs. mini)--122 platforms
- No maintenance agreement but INOMS indicates maintenance agreement--111 platforms
- Maintenance agreement but INOMS indicates no maintenance agreement--100 platforms
- Wrong serial number--44 platforms
- Wrong status (active vs. inactive)--52 platforms
- Wrong product name, manufacturer, or model--61 platforms
- Wrong location on INOMS--15 platforms
- Not able to locate--2 platforms

Of the 386 errors identified, 67% were NCR/AT&T 3430 models.

Of the 386 platforms with errors, 260 (67%) were NCR/AT&T 3430 models. Many of these were incorrectly classified as microcomputers (see misclassification errors above), and some were also recorded as 3230 models (see wrong product name, manufacturer, or model above). We have discussed the field and customer organizations' continued confusion about how to record the NCR 3430s with the Tier II Project Owner and CDC Project Office staff. During our audit testing, the Y2K Executive for Service Centers sent e-mail to all service centers clarifying how an NCR 3430 is to be recorded on INOMS.

Tier II COTS software inventory is incomplete and inaccurate

We conducted two tests to verify the COTS software inventory. Initially we selected a statistical sample of

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The versions recorded on INOMS for Tier II COTS software products are not accurate.

Of 411 products reviewed, 28% were not recorded on INOMS and 31% had errors on INOMS.

Inventories are incomplete and inaccurate despite annual inventory certifications.

COTS software products nationwide to verify the accuracy of these items on INOMS. Secondly, we selected two or three platforms in each site to verify that the COTS software products running on those platforms were accurately recorded on INOMS.

Our statistical sample included 168 products that were located in the 26 sites visited. Of the 168 products, 77 (46%) had an incorrect version on INOMS. This was the most significant error identified in this accuracy test.

Our second test identified 411 COTS software products running on 55 platforms. Of these:

- Not recorded on INOMS--115 (28%)
- Incorrect version--89 (22%)
- Other errors--40, including 31 items with the wrong product name or manufacturer, 5 in the incorrect status, 3 with the wrong serial number, and 1 with duplicate records on INOMS.

According to GAO's Year 2000 Computing Crisis: An Assessment Guide, agencies should conduct an enterprise-wide inventory as part of the assessment phase of the Y2K conversion process. The guide states that a thorough inventory ensures that all systems are identified and linked to a specific business area or process. In addition, the inventory should be used to develop a comprehensive system portfolio including platforms, database management systems and operating system software and utilities.

The INOMS inventory continues to be incomplete and inaccurate despite each district and service center director's annual certification of its accuracy. The inaccuracies of the INOMS inventory affect the Tier II Program Owner's ability to ensure all Tier II products have been identified and are being considered as part of the Y2K conversion effort. Inventory inaccuracies can also affect the Service's overall assurance that all Tier II systems will be able to operate through the beginning of the new century.

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Maintenance contract information becomes significant in the budgetary planning for the conversion of the Tier II infrastructure. The Tier II Program Office is assuming vendors will provide Y2K upgrades under existing maintenance contracts. Based on this assumption, estimated budget needs for the infrastructure conversion may be significantly understated.

The completeness and accuracy of the INOMS inventory significantly impacts the Project and Program Offices' ability to effectively manage the Y2K conversion of the Tier II infrastructure. Our testing shows that no reliance can currently be placed on the completeness or accuracy of INOMS as it relates to the COTS products running on the Tier II systems in the field. In addition, reliance cannot be placed on the accuracy of platform information on INOMS for Tier II.

The effectiveness of Y2K management efforts is negatively impacted by the current condition of the INOMS inventory.

Items that are not recorded in the inventory run the risk of not being considered for conversion. In addition, inaccuracies in the status and maintenance information on INOMS could negatively impact the estimated budget needs for the Tier II conversion effort.

The systems associated with and potentially impacted by these INOMS inaccuracies include: Automated Insolvency System (AIS), Automated Lien System (ALS), Automated Underreporter (AUR), Electronic Fraud Detection System (EFDS), Electronic Management System (EMS), Integrated Case Processing (ICP), and Telephone Routing Interactive System (TRIS).

Recommendation

7. We recommend that the CIO utilize assistance from a vendor to validate the Tier II inventory on all mission-critical Tier II systems in all applicable sites.

To address the remaining systems, we recommend that the CIO:

8. Communicate our findings to all District and Service Center Directors and require them to recertify their

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INOMS inventory. The recertification should include a statement that the District and Service Center Directors have read and understand the findings identified by Internal Audit and the importance of an accurate inventory system.

In addition, we recommend that:

9. FY 1999 District and Service Center Directors' expectations specifically address the requirement to maintain an accurate INOMS inventory.
10. National and local purchasing functions be required to load accurate INOMS data as the item is purchased. This data should include all basic information including product name, manufacturer, and model, as well as warranty and maintenance information. The receiving location should then check the INOMS record for accuracy and update the record when the item is received.

Contingency plans for delays in vendor schedules and infrastructure upgrades are needed.

Tier II conversion is dependent on vendor's delivery of products and timely infrastructure upgrades by the field.

The conversion of Tier II systems depends in large part on the ability of outside vendors to deliver Y2K compliant products within the Service's established timeframes. In addition, the conversion of the infrastructure is dependent on the timeliness of the field office upgrades of the Tier II infrastructure components. Our review shows that the Tier II infrastructure could be in jeopardy if contingency plans are not put in place to adapt for vendor and upgrade delays.

We identified 9 COTS products from our sample that did not currently have a Y2K compliant version available.

We evaluated vendor's progress in delivering the Y2K compliant versions by retesting a statistical sample of 220 COTS software products. Our review identified 133 unique COTS software products. We were unable to determine the status of the compliant versions for 27 of the 133 products because the product and manufacturer information was not available on INOMS.

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Only 2 of 55 platforms reviewed had the targeted Y2K compliant products at the time of our review.

In addition, 23 products have been moved to either Tier I or Tier III; 32 products are components of an operating system and 5 products have incorrect product names on INOMS.

Of the remaining 46 software products, we found that 9 (20%) did not have a Y2K compliant version currently available from the vendor.

Our analysis of the field offices' progress in upgrading the Tier II infrastructure components showed platforms are not being upgraded. We reviewed a judgmental sample of 55 platforms to determine if the operating system and Database Management System (DBMS) had been upgraded to the IRS target versions. Of the 55 platforms reviewed, we found that one platform was running the target operating system and one platform was running the target DBMS.

Vendor delivery schedules and the efforts of the field offices are critical to the success of the Service's efforts to upgrade the Tier II infrastructure. The inability of vendors to supply the Service with Y2K compliant products in a timely manner jeopardizes our ability to validate those products and place them into production prior to the January 1999 target date.

Recommendation

11. We recommend the CIO ensure that detailed contingency plans are developed to account for delays in vendor delivery and field office upgrades. The contingency plans should include:

- Identification of each product not yet made available by the vendor.
- An action plan to obtain the compliant vendor product and an estimated date this product will be available, or the identification of a compliant replacement product.
- An assessment of the impact of the vendor delay or the upgrade delay on the Tier II conversion effort.

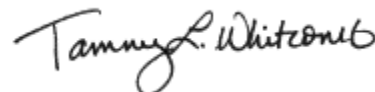
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In addition, a process should be established to monitor the progress of items covered by the contingency plan to ensure the action plans accurately address each condition and are carried out timely.

Conclusion

The CDC Project Office and the Tier II Program Office have made progress in the way the Y2K effort is being tracked and managed. However, weaknesses still exist in the management methods being used to ensure the Service will be in a position to operate in the next century. The inventory system, which is the primary tool being used to track the progress of the Y2K initiative, is flawed. Guidance for input to the system conflicts with CDC Project Office and Tier II Program Office needs. In addition, the inventories captured on INOMS are inaccurate and incomplete. These basic problems significantly increase the risk that items will not be identified for consideration in the Service's conversion efforts.

Each of the activities discussed in this report is included as steps in the awareness and assessment phases outlined in GAO's Assessment Guide for Year 2000. According to the guide, these phases should have been completed by mid-1997 to ensure conversion is completed by the Y2K. However, the Service is still in the process of finalizing their Tier II inventory and establishing detailed management and test plans for the Tier II initiative. Based on our assessment, conversion of the Tier II processing systems by January 1999 is in jeopardy.



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Audit Manager

Detailed Objectives and Scope of Review

The overall objective of this review was to assess the IS and non-IS Tier II Y2K efforts to determine if the Service has assurance that its Tier II infrastructure will operate in the next century.

Because we found consistent INOMS inaccuracies in the offices visited in the Midstates, Southeast, and Northeast Region geographic areas (certain districts, service centers, computing and development centers) we decided not to continue testing in Western Region and National Office. We discussed this decision with the CDC Project Office, and they agreed they would prefer an expedited report, even though we could no longer statistically project the results to the entire Tier II population.

To accomplish our overall objective, we conducted the following tests:

- I. We evaluated whether the Service's efforts ensure that IS and non-IS Tier II platforms operate in a Y2K compliant environment.
 - A. Evaluated Service efforts to standardize and update the Tier II platform inventory on INOMS.
 1. Assessed Service efforts to define the Tier II platform inventory.
 - a) Evaluated procedures developed by the Project Office for defining the scope of the Tier II platform inventory.
 - b) Reviewed 31 communications between the field offices and various CDC Project Offices, Tier II Program Office, and IRS executives to determine if the Project Office:
 - (1) Communicated the due dates for the clean up efforts and funding consequences to the proper level of field executive management.
 - (2) Followed appropriate strategic management procedures to ensure that designated field executives were informed of milestones that must be met by their employees to enable successful implementation.
 - c) Obtained and reviewed a Tier II conversion implementation schedule from the Project Office and determined the impact that delays in inventory clean up efforts will have on overall implementation.
 - d) Determined the follow-up efforts undertaken by the Project Office for offices not responding timely or accurately to the initial clean up request.

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2. Evaluated the field offices' commitment to the standardization and clean up of INOMS.
 - a) Identified both the field office Officials notified of the February 11, 1998, conference call about the INOMS clean up for Tier II, and the conference call participants designated by each field office.
 - b) Determined the number of management levels between the two individuals identified above.
 - c) Obtained from the Project Office, the field offices that either did not respond or returned an incomplete response. For those field offices, we evaluated the certification process used to validate their responses.
3. For the 26 audit sites determined by our sample in Objective II.A, we validated the accuracy of the clean-up efforts for items listed on the "To Be Reviewed" spreadsheets distributed by the Tier II Software Systems Branch on February 11, 1998.
 - a) Traced 226 items on the "To Be Reviewed" spreadsheet to the INOMS ADP inventory to determine if the item was updated on INOMS.
 - b) Interviewed the point of contact listed on the "To Be Reviewed" spreadsheet to determine if the updates were correct.
- B. Determined if the Service has identified all currently operating platforms and included them in the INOMS inventory of Tier II platforms for consideration during the Y2K conversion.
 1. Contacted the Functional Analysts or Systems Administrators in 26 audit sites and identified 837 minicomputers currently in operation.
 2. Traced each minicomputer to the INOMS ADP inventory to ensure the platform was recorded in the Y2K Tier II inventory and the following fields were accurate:
 - Serial Number
 - Product, Manufacturer, & Model
 - Status (Active vs. Inactive)
 - Inventory Type (Micro vs. Mini vs. Mainframe)
 - Maintenance
 - Location
- C. Determined if a Y2K compliant operating system is planned or is available for each active Tier II platform.

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1. In 26 audit sites, we:
 - a) Contacted the Technical Point of Contact for each platform with a Y2K operating system to determine if the Y2K compliant operating system has been obtained.
 - b) Determined what testing, if any, the audit site has done on the Y2K operating system and evaluated those test results.
 2. Identified 11 platforms with available Y2K operating system and DBMS based on the Tier II Manufacturer spreadsheet dated 4/20/98.
- D. Determined how the Service plans to address active Tier II platforms without a planned Y2K operating system.
1. Identified 176 platforms in our 26 audit sites that do not have Y2K operating system or DBMS available, based on the Tier II Manufacturer's spreadsheet dated 4/20/98.
 2. Contacted the Tier II Software Systems Branch to determine what actions are being taken to replace these platforms.
 3. Contacted the Technical Point of Contact for each platform to determine:
 - a) What actions are being taken to ensure the applications currently running on these platforms will be available in the Y2K, or
 - b) What actions are being taken to ensure the applications currently running on these platforms will operate beyond 1999.
- II. We evaluated whether the Service's IS and non-IS Tier II COTS products and Tier II applications are accurately tracked on INOMS.
- A. Selected a statistical sample of 220 active COTS software products from a download of the INOMS ADP inventory. The CDC Project Office provided the download as of April 10, 1998. We selected a statistical sample proportioned between IS and non-IS products (7 & 93%, respectively) using a 95% confidence rate, a projected error rate of 5% and a precision of $\pm 3\%$. We verified the accuracy of the status in the 26 offices we visited, and:
1. Determined the accuracy of the information recorded on INOMS by physically verifying and reviewing documentation for 168 COTS products. We verified the accuracy of the following fields on INOMS:
 - Version
 - Product/Manufacturer
 - Serial Number
 - Status
 - Associated Platform

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- B. Selected a judgmental sample of 55 platforms in the 26 sites we visited and traced the products currently running on those platforms to the INOMS ADP Inventory, to see if they were accurately listed.
 - 1. For those items not listed on INOMS:
 - a) Interviewed the Tier II Systems Software Branch to determine if the COTS product will be scheduled for conversion.
 - b) Evaluated the COTS product to determine the impact on tax processing if the application is not converted.
 - C. Evaluated how the Service is addressing “inactive” COTS products for purposes of the conversion. We obtained a download of all inactive Tier II COTS products from the CDC Project Office; hardware as of May 8 and software as of May 19, 1998. We selected a national statistical sample of 84 hardware and 106 software products using a 90% confidence rate, a projected error rate of 5% and a precision of $\pm 3\%$. We verified the accuracy of the status in those offices we visited.
 - 1. Determined if inactive platforms and COTS software will be included in the budget base for Tier II funding.
 - 2. Verified the status of 45 inactive platforms and 92 COTS software products listed on INOMS, with the INOMS point of contact, to determine whether the product status was accurately recorded.
 - D. Obtained the most recent INOMS inventory certification prepared by the Director at each site.
- III. We evaluated whether the Service can rely on vendors’ efforts to make Tier II COTS products Y2K compliant.
- A. Using the sample in Objective II.A, we utilized the Tier II Program Office's analysis of progress made in obtaining Y2K compliant COTS products to determine whether those products can be delivered, tested, and implemented by, January 1999.
 - 1. Accessed the Y2K and COTS Central Clearinghouse Internet home pages to determine the IRS target versions for the COTS products.
 - 2. Evaluated the vendors’ delivery schedules and the Service’s January 31, 1999, planned implementation date to determine if that target date is feasible.
 - B. Assessed the impact on the Service’s processing if critical Tier II COTS products are not tested and implemented by January 1999.
 - 1. Compared the versions of the operating system and the DBMS currently running on the 55 platforms reviewed in Objective II.B to determine how far the Service is from their target infrastructure.

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2. Identified the systems running on those 55 platforms and analyzed the impact of delays in implementing the target infrastructure on IRS processing.
3. Determined if the IS and non-IS areas have developed sufficient contingencies in case necessary Tier II COTS products are not available by January 1999.